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Substitute for Form 1449A/PTO		Complete if Known	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary.)		Application Number	10/612,592
		Filing Date	July 1, 2003
		First Named Inventor	William W. May, Jr.
		Art Unit	2193
		Examiner Name	Malzahn, David H.
Sheet	of	Attorney Docket Number	42P15764

## U.S. PATENT DOCUMENTS

Exam. Initials	Cite No. <sup>1</sup>	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	AA	US-6,816,961	11/9/2004	Rice et al.	
	AB	US-2003/0131030	7/10/2003	Sebot et al.	
	AC	US-6,745,319	6/1/2004	Balmer et al.	
	AD	US-2005/0188182	8/25/2005	Hoyle et al.	
	AE	US-2002/0002666	1/3/2002	Dulong et al.	
	AF	US-2003/0123748	7/3/2003	Sebot et al.	
	AG	US-2001/0016902	8/23/2001	Abdallah et al.	
	AH	US-6,211,892	4/3/2001	Huff et al.	
	AI	US-6,115,812	9/5/2000	Abdallah et al.	
	AJ	US-2003/0231711	12/18/2003	Zhang et al.	
	AK	US-2002/0172287	11/21/2002	King	
	AL	US-2002/0159529	10/31/2002	Wang et al.	
	AM	US-			
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	AP	US-			
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## FOREIGN PATENT DOCUMENTS

Exam. Initials	Cite No. <sup>1</sup>	Foreign Patent Document Country Code* Number* Kind Code*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T*
	AU					
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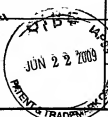
<sup>1</sup> Applicant's unique citation designation number (optional). 2See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04.

3Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. 5Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6Applicant is to place a check mark here if English language Translation is attached.

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Substitute for Form 1449A/PTO (Modified) (use as many sheets as necessary)		Attorney Docket No.: 42, P15,7164	Application Number: 10/612,592
Page		First Named Inventor: William W. May Jr.	Examiner: Malzahn, David H.
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**OTHER ART - NO PATENT LITERATURE DOCUMENTS**

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		AVARO, Olivier, et al., <i>MPEG-4 Systems Overview and Architecture</i> , woody.imag.fr/MPEG4/syssite/syssub/docs/tutorial/, 28/05/98, pp. 1-71 plus Yahoo site ref.	
		BIERLING, M., <i>Displacement Estimation by Hierarchical Blockmatching</i> , SPIE, Vol. 1001, Visual Communications and Image Processing, May 1998, pp. 942-951.	
		CHAN, Y.L. and W.C. Siu, <i>Adaptive Multiple-Candidate Hierarchical Search for Block Matching Algorithm</i> , IEE Electronics Letters, Vol. 31, No. 19, Sept. 14, 1995, pp. 1637-1639.	
		CHAN, Yui-Lam and Wan-Chi Siu, <i>New Adaptive Pixel Decimation for Block Motion Vector Estimation</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 6, No. 1, Feb. 1996, pp. 113-118.	
		CHEN, Liang-Gee, Wai-Ting Chen, Yeu-Shen Jehng Tzi-Dar Chuieh, <i>An Efficient Parallel Motion Estimation Algorithm for Digital Image Processing</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 1, No. 4, Dec. 1991, pp. 378-384.	
		CHENG, K.W., S.C. Chan, <i>Fast Block Matching Algorithms for Motion Estimation</i> , ICASSP96, 1996, pp. 2318ff.	
		CORBAL, Jesus, et al., <i>DLP+TLP Processors for the Next Generation of Media Workloads</i> , 0-7695-1019-1/01, IEEE, 2001, pp. 219-228.	
		DAY, Neil, Ed., <i>Introduction to MPEG-7 (v.3.0)</i> , International Organization for Standardization, ISO/IEC JTC1/SC29/WG11, Coding of Moving Pictures and Audio, #N4032, March 2001, pp. 1-10.	
		DUFAUX, Frederic, et al., <i>Efficient, Robust, and Fast Global Motion Estimation for Video Coding</i> , 1057-7149/00, IEEE, 2000, pp. 497-501.	
		ECKART, Stefan, Chad Fogg, <i>ISO/IEC MPEG-2 Software Video Codec</i> , SPIE Vol. 2419, Digital Video Compression: Algorithms and Technologies, 1995, San Jose, CA. 15 pages	
		EDIRISINGHE, E.A., et al., <i>Shape Adaptive Padding for MPEG-4</i> , 0098 3063/00, IEEE, 2000, pp. 514-520.	
		FENG, J., Lo, K. T. Mehrpour, H. Karbowski, A.E., <i>Adaptive Block-Matching Motion Estimation Algorithm for Video Coding</i> , IEE Electronics Letters, Vol. 31, No. 18, 1995, pp. 1542-1543.	
		FURHT, Botho, Joshua Greenberg, Raymond Westwater, <i>Motion Estimation Algorithm for Video Compression</i> , Kluwer Academic Publishers, Boston, 1997, pp. cover-vi, 11, 49-95.	
Examiner Signature		Date Considered	

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Substitute for Form 1449A/PTO (Modified) (use as many sheets as necessary)	Attorney Docket No.: 42P15764	Application Number: 10/612,592
Page	First Named Inventor: William W. Macy, Jr.	Examiner: Matzahn, David H.
Confirmation No.	Filing Date: July 1, 2003	Art Unit: 2193

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		GHANBARI, M., <i>The Cross-Search Algorithm for Motion Estimation</i> , IEEE Transactions on Communications, Vol. 38, No.7, Jul. 1990, pp. 950-953.	
		HE, Zhongli, M.L. Liou, <i>A High Performance Fast Search Algorithm for Block Matching Motion Estimation</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 7, No. 5, Oct. 1997, pp. 826-828.	
		HE, Zhong-Li, M.L. Liou, <i>Design of Fast Motion Estimation Algorithm based on Hardware Consideration</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 7, No.5, Oct. 1997, pp. 819-823.	
		HEISING, G., et al., <i>MoMuSys: MPEG-4 Version 2 Video Reference Software Package</i> , AC098/HHI/WP5.1/DS/P/049/B1, 1998, Abstract and pp. 1-8.	
		INTEL CORPORATION, <i>Block-Matching in Motion Estimation Algorithms Using Streaming SIMD Extensions 2 (SSE2)</i> , Vers. 2.0 9/22/00, Order No. 248605-001, pp. 1-13, A-1, A-2.	
		INTERNATIONAL ORGANISATION FOR STANDARDISATION, <i>Optimization Model, Version 2.0</i> , ISO/IEC JTC1/SC29/WG11, Coding of Moving Pictures and Audio, #N3675, October 2000, 12 pp.	
		INTERNATIONAL ORGANISATION FOR STANDARDISATION, <i>New MPEG-4 Profiles Under Consideration</i> , ISO/IEC JTC1/SC29/WG11, Coding of Moving Pictures and Audio, #N3932, January 2001, pp. 1-35.	
		JAIN, J., A. Jain, <i>Displacement Measurement and its Application in Interframe Image Coding</i> , IEEE Transactions on Communications, Vol. 29, No. 12, Dec. 1981, pp. 1799-1808.	
		JU, John C.-H., et al., <i>A Fast Rate-Optimized Motion Estimation Algorithm for Low-Bit-Rate Video Coding</i> , 1051-8215/99, IEEE, 1999, pp. 994-1002.	
		JUNG, Hae Mook, Duch Dong Hwang Coong Soo Park, Han Soo Kim, <i>An Annular Search Algorithm for Efficient Motion Estimation</i> , International Picture Coding Symposium, PCS96, 1996, pp. 171-174.	
		KAPPAGANTULA, S., K.R. Rao, <i>Motion Compensated Interframe Image Prediction</i> , IEEE Transactions on Communications, 33(9), Sept. 1985, pp. 1011-1015.	
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Page		First Named Inventor: William W. Macy, JR	Examiner: Malzahn, David H.
Confirmation No.		Filing Date: July 1, 2003	Art Unit: 2193
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		KIM, Joon-Seek, Rae-Hong Park, <i>A Fast Feature-Based Block Matching Algorithm Using Integral Projections</i> , IEEE Journal on Selected areas in communications, Vol.10, No.5, June 1992, pp. 968-971.	
		KIM, Michelle, Ed., <i>MPEG-4 Systems</i> , International Organization for Standardization, ISO/IEC JTC1/SC29/WG11, Coding of Moving Pictures and Audio, #N3383, June 2000, pp. 1-19.	
		KNEIP, Johannes, et al., <i>Applying and Implementing the MPEG-4 Multimedia Standard</i> , 0272-1732/99, IEEE, 1999, pp. 64-74.	
		KNEIP, J. (Johannes), et al., <i>The MPEG-4 Video Coding Standard—a VLSI Point of View</i> , IEEE Workshop on Signal Processing Systems (SIPS98), 8-10 Oct. 1998, pp. 43-52, A-1, A-2.	
		KOGA, J., et al., <i>Motion Compensated Interframe Coding for Video Conferencing</i> , Proceedings of the National Telecommunications Conference, 1981, pp. G5.3.1- 5.3.3.	
		KOENEN, Rob, Ed., <i>Overview of the MPEG-4 Standard</i> , International Organization for Standardization, ISO/IEC JTC1/SC29/WG11, Coding of Moving Pictures and Audio, #N4030, March 2001, pp. 1-69.	
		KUHN, P., <i>Algorithms, Complexity Analysis and VLSI Architectures for MPEG-4 Motion Estimation</i> , 1999 Kluwer Academic Publishers, Boston, pp. cover-vi, 15, 17-59, 107-109, 119-121, 147-167, and 189-204.	
		KUHN, P., Stechele W., <i>Complexity Analysis of the Emerging MPEG-4 Standard as a Basis for VLSI Implementation</i> , vol. SPIE 3309 Visual Communications and Image Processing, San Jose, Jan.1998, pp. 498-509.	
		LEE, Liang-Wei, Jhing-Fa Wang, Jau- Yien Lee, Jung-Dar Shie, <i>Dynamic Search-Window Adjustment and Interlaced Search Block-Matching Algorithm</i> , IEEE Transactions on circuits and systems for video technology, Vol. 3, No. 1, Feb. 1993, pp. 85-87.	
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		LEE, W., Y. Kim, R.J. Gove, C.J. Read, <i>Media Station 5000: Integrating Video and Audio</i> , IEEE Multimedia, Vol. 1, No. 4, 1994, pp. 50-61.	
		LEE, Xiaobing, Ya-Qin Zhang, <i>A Fast Hierarchical Motion-Compensation Scheme for Video Coding Using Block-Feature Matching</i> , IEEE Transactions on Circuits and Systems for Video Technology, Vol. 6, No. 6, Dec. 1996, pp. 627-635.	
		LENGWEHASATTI, Krisda, et al., <i>A Novel Computationally Scalable Algorithm for Motion Estimation</i> , SPIE 3309 VCIP Visual Communications and Image processing, San Jose, CA, Jan. 1998, pp. 66-79.	
		LI, R., B. Zeng, M.L. Liu, <i>A New Three-Step Search Algorithm for Block Motion Estimation</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 4, No. 4, Aug. 1994, pp. 438-442.	
		LI, W., E. Salari, <i>Successive Elimination Algorithm for Motion Estimation</i> , IEEE Trans. Image Processing, Vol. 4, Jan. 1995, pp. 105-107.	
		LIANG, Jie, et al., <i>Region-Based Video Coding with Embedded Zero-Trees</i> , 1068-0314/97, IEEE, 1997, p. 449.	
		LIU, B., A. Zaccarin, <i>New Fast Algorithms for the Estimation of Block Motion Vectors</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol.3, No.2, April 1993, pp. 148-157.	
		LIU, Lurng-Kuo, Ephraim Feig, <i>A Block-Based Gradient Descent Search Algorithm for Block-Based Motion Estimation in Video Coding</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 6, No. 4, Aug. 1996, pp. 419-422.	
		MO, Hyeon-Cheol, et al., <i>A High-Speed Pattern Decoder in MPEG-4 Padding Block Hardware Accelerator</i> , 0-7803-6685-9/01, IEEE, 2001, pp. II-197 - II-200.	
		MOSCHETTI, F., et al., <i>About Macroblock Subsampling for Motion Estimation on IA-64</i> , Proc. of 2001 IEEE Int'l. Conf. on Multimedia and Expo (ICME 2001), Tokyo, Japan, August 2001, 4 pp.	
		MOSCHETTI, F., et al., <i>A Fast Block Matching for SIMD Processors Using Subsampling</i> , IEEE #0-7803-5482-6/99, pp. IV-321 - IV-324. 2000.	
		NAM, Kwon Moon, Joon-Seek Kim, Rae-Hong Park, Young Serk Shim, <i>A Fast Hierarchical Motion Vector Estimation Algorithm Using Mean Pyramid</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 5, No. 4, Aug. 1995, pp. 344-351.	
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		NETRAVALI, A., B. Haskell, <i>Digital Pictures Representation and Compression</i> , New York, Plenum, 1988, pp. cover-xv, 334-340, 537-542, and 354-355.	
		PIRSCH, Peter, Nicolas Demassieux, Winfried Gehrke, <i>VLSI Architectures for Video Compression - A Survey</i> , Proceedings of the IEEE, Vol. 83, No. 2, Feb. 1995, pp. 220-246.	
		PO, Lai-Man, Wing-Chung Ma. <i>A Novel Four-Step Search Algorithm for Fast Blockmatching</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 6, No. 3, Jun. 1996, pp. 313-317.	
		PURI, A., H.M. Hang, D.L. Schilling, <i>An Efficient Blockmatching Algorithm for Motion Compensated Coding</i> , Proc. IEEE ICASSP, 1987, pp. 2.4.1-25.4.4.	
		RAGSDALE, Gary L., et al, <i>Relationships of Popular Transmission Characteristics to Perceived Quality for Digital Video Over ATM</i> , National Communications System, Technical Information Bulletin 99-2, January 1999, 64 pp.	
		RAMKISHOR, K., et al., <i>Real Time Implementation of MPEG-4 Video Decoder on ARM7TDMI</i> , Proc. of 2001 Int'l. Symposium on Intelligent Multimedia, Video and Speech Processing, May 2-4, 2001, pp. 522-526.	
		SHI, Y.Q., X. Xia, <i>A Thresholding Multiresolution Block Matching Algorithm</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 7, No. 2, April 1997, pp. 437-440.	
		SIKORA, Thomas, <i>MPEG Digital Video Coding Standards</i> , Preprint from Digital Consumer Electronics Handbook, 1 <sup>st</sup> Ed., McGraw-Hill Book Co., Ch. 9, pp. 1-43.	
		SIKORA, Thomas, <i>MPEG-1 and MPEG-2 Digital Video Coding Standards</i> , Preprint from Digital Consumer Electronics Handbook, 1 <sup>st</sup> Ed., McGraw-Hill Book Co., pp. 1-43.	
		SIKORA, Thomas, <i>The Structure of the MPEG-4 Video Coding Algorithm</i> , Preprint from Digital Consumer Electronics Handbook, 1 <sup>st</sup> Ed., McGraw-Hill Book Co., pp. 1-16.	
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		SONG, Byung Cheol, Jong Beom Ra, <i>A Hierarchical Block Matching Algorithm Using Partial Distortion Criteria</i> , SPIE 3309 VCIP Visual Communications and Image Processing, 1998, San Jose, CA, pp. 88-95.	
		SRINIVASAN, Ram and K.R. Rao, <i>Predictive Coding Based on Efficient Motion Estimation</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. Com-33, No. 8, Aug. 1985, pp. 888-896.	
		STOLBERG, H.-J., et al., <i>The M-Pire MPEG-4 Codec DSP and Its Macroblock Engine</i> , 0-7803-548206/99, IEEE, 2000, pp. II-192-II-195.	
		THAM, Jo Yew, et al., <i>Transactions Letters: A Novel Unrestricted Center-Biased Diamond Search Algorithm for Block Motion Estimation</i> , IEEE, 1051-8215/98, 1998, pp. 369-377.	
		van der SCHAAR, M., et al., <i>Near-Lossless Complexity-Scalable Embedded Compression Algorithm for Cost Reduction in DTV Receivers</i> , 0098 3063/00, IEEE, 2000, pp. 923-933.	
		WANG, Chung-Neng, et al., <i>Improved MPEG-4 Visual Texture Coding Using Double Transform Coding</i> , 0-7803-6685-9/01, IEEE, 2001, pp. V-227 - V-230.	
		WESTERINK, P. H., et al., <i>Two-Pass MPEG02 Variable-Bit-Rate Encoding</i> , IBM J. Res. Develop, Vol. 43, No. 4, July 1999, pp. 471-488.	
		WITTENBURG, J.P., et al., <i>HiPAR-DSP: A Parallel VLIW-RISC Processor for Real Time Image Processing Applications</i> , (0-7803-4229-1/97) IEEE, 1997, pp. 155-162.	
		XU, Jie-Bin, Lai-man Po, and Chok-Kwan Cheung, <i>A New Prediction Model Search Algorithm for Fast Block Motion Estimation</i> , IEEE Int. Conf. Image Processing, ICIP97, Santa Barbara, 1997, pp. 30-33.	
		YU, Fengqi and Alan N. Willson, Jr., <i>A Flexible Hardware-Oriented Fast Algorithm for Motion Estimation</i> , ICASSP97, 1997, pp. 2681ff.	
		ZHU, Shan, Kai-Kuang Ma, <i>A New Diamond Search Algorithm for Fast Block Matching</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 9, No. 2, Feb. 2000, pp. 287-290.	
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	Filing Date	July 1, 2003
	First Named Inventor	William W. Macy, Jr.
	Art Unit	2193
	Examiner Name	Malzahn, David H.
Attorney Docket Number		42 P15764

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	1	5019968		1991-05-28	Wang, et al.	
	2	5321810		1994-06-14	Case, et al.	
	3	5497497		2008-01-23	Miller, et al.	
	4	6381690		2002-04-30	Lee	
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	1	20030084082		2003-05-01	Debes, Eric; et al.	

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Art Unit	293
Examiner Name	Malzahn, David H.
Attorney Docket Number	43P15764

2	20020112147		2002-08-15	Chennupaty, Srinivas; et al.	
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	1	PHILIPS ELECTRONICS, "TriMedia TM1000 Preliminary Data Book," 1997, 70pgs	<input type="checkbox"/>
	2	"MIPS Digital Media Extension," Set Architecture Specification, Web Site - mips.com/MDMXspec.ps, October 21, 1997, 8 pgs	<input type="checkbox"/>
	3	HEWLET PACKARD, "64-bit and Multimedia Extensions in the PA-RISC 2.0 Architecture," Microprocessors Precision Architecture, 1997, 18 pgs	<input type="checkbox"/>
	4	KAWAKAMI, Y., ET AL., "A Single-Chip Digital Signal Processor for Voiceband Applications," IEEE, 1980 International Solid-State Circuits Conference, pp. 40-41, 1980.	<input type="checkbox"/>
	5	SUN MICROSYSTEMS, INC., "UltraSPARC Multimedia Capabilities On-Chip Support for Real-Time Video and Advanced Graphics," SPARC Technology Business, September 1994, 8 pgs	<input type="checkbox"/>

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
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Application Number	101612, 592
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Art Unit	2193
Examiner Name	Malzahn, David H.
Attorney Docket Number	42 P15164

6	CASE, B., "Philips Hopes to Displace DSPs with VLIW, TriMedia Processors Aimed at Future Multimedia Embedded Apps," Microprocessor Report, December 1994, pp. 12-18	<input type="checkbox"/>
7	Gwennap, L., "New PA-RISC Processor Decodes MPEG Video, H's PA-7100LC Uses New Instructions to Eliminate Decoder Chip," Microprocessor Report, January, 1994, pp. 16-17	<input type="checkbox"/>
8	TEXAS INSTRUMENTS, "TMS320C2X User's Guide," 1993, pp 3:2-3:11; 3:28-3:34; 4:1-4:22; 4:41; 4:103; 4:119-J:120; 4:122; 4:150-4:151	<input type="checkbox"/>
9	INTEL CORPORATION, "i860 TM Microprocessor Family Programmer's Reference Manual," 1992, Chapters 1, 3, 8 and 11	<input type="checkbox"/>
10	LEE, R. B., "Accelerating Multimedia with Enhanced Microprocessors," IEEE Micro, April 1995, pp. 22-32	<input type="checkbox"/>
11	INTEL CORPORATION, "Pentium Processor's User's Manual, vol. 3; Architecture and Programming Manual," 1993, Chapters 1, 3, 4, 6, 8, and 18	<input type="checkbox"/>
12	MARGULIS, N., "i860 Microprocessor Architecture," McGraw Hill, Inc., 1990, Chapters 6, 7, 8, 10, and 11	<input type="checkbox"/>
13	INTEL CORPORATION, "Intel i750, i860 TM, i960 Processors and Related Products, 1993, pp. 1-3	<input type="checkbox"/>
14	MOTOROLA, INC., "Motorola MC88110 Second Generation RISC Microprocessor User's Manual," 1991, <i>60 pages</i>	<input type="checkbox"/>
15	MOTOROLA, INC., "Errata to MC88110 Second Generation RISC Microprocessor User's Manual," 1992, pp. 1-11	<input type="checkbox"/>
16	MOTOROLA, INC., "MC88110 Programmer's Reference Guide, 1992, pp. 1-4	<input type="checkbox"/>

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Attorney Docket Number	42P15764

17	SHIPNES, J., "Graphics Processing with the 88110 RISC Microprocessor," Motorola, Inc. IEEE, No. 0-8186-26455-0/92, 1992, pp. 169-174	<input type="checkbox"/>
18	ADVANCED MICRO DEVICES, INC., "AMD-3D Technology Manual," February 1998, pp. 1-58	<input type="checkbox"/>
19	HANSEN, C., "Architecture of a Broadband Mediaprocessor," Proceedings of Compcon, IEEE, 1996, pp. 334-340	<input type="checkbox"/>
20	LEVINTHAL, ET AL., "Chap--A SIMD Graphics Processor," Computer Graphics Project, ACM, vol. 18, No. 3, July 1984, pp. 77-81	<input type="checkbox"/>
21	LEVINTHAL, ET AL., "Parallel Computers for Graphics Applications," Proceedings: Second International Conference on Architectural Support for Programming Languages and Operating Systems, (ASPLOS II), IEEE, 1987, pp. 193-198	<input type="checkbox"/>
22	WANG, ET AL., "A Processor Architecture for 3D Graphics Calculations," Computer Motion, Inc., Goleta, CA, 23 pgs	<input type="checkbox"/>

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## U.S. PATENTS

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	1	3711692		1973-01-16	BATCHER	
	2	3723715		1973-03-27	CHEN et al.	
	3	4139899		1979-02-13	TULPULE et al.	
	4	4161784		1979-07-17	CUSHING et al	
	5	4393468		1983-07-12	NEW	
	6	4418383		1983-11-29	DOYLE et al.	
	7	4490786		1984-12-25	NAKATANI	
	8	4498177		1985-02-05	LARSON	

**INFORMATION DISCLOSURE  
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9	4707800	1987-11-17	MONTRONE et al.	
10	4771379	1988-09-13	ANDO et al.	
11	4903228	1990-02-20	GREGOIRE et al.	
12	4989168	1991-01-29	KURODA et al.	
13	5081698	1992-01-14	KOHN	
14	5095457	1992-03-10	JEONG	
15	5168571	1992-12-01	HOOVER et al.	
16	5187679	1993-02-16	VASSILIADIS et al.	
17	5268995	1993-12-07	DIEFENDORFF et al.	
18	5390135	1995-02-14	LEE et al.	
19	5408670	1995-04-18	DAVIES	

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20	5423010	1995-06-06	MIZUKAMI
21	5426783	1995-06-20	NORRIE et al.
22	5465374	1995-11-07	DINKJIAN et al.
23	5487159	1996-01-23	BYERS et al.
24	5524256	1996-06-04	TURKOWSKI
25	5579253	1996-11-26	LEE et al.
26	5594437	1997-01-14	O'MALLEY
27	5625374	1997-04-29	TURKOWSKI
28	5680161	1997-10-21	LEHMAN et al.
29	5781457	1998-07-14	COHEN et al.
30	5819117	1998-10-06	HANSEN

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31	5822619	1998-10-13	SIDWELL	
32	5838984	1998-11-17	NGUYEN et al.	
33	5909572	1999-06-01	THAYER et al.	
34	5933650	1999-08-03	van HOOK et al.	
35	6041404	2000-03-21	ROUSSEL et al.	
36	6115812	2000-09-05	ABDALLAH et al.	
37	6192467	2001-02-20	ABDALLAH et al.	
38	6288723	2001-09-11	HUFF et al.	
39	6484255	2002-11-19	DULONG	
40	6546480	2003-04-08	MANDAVILLI et al.	
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